

The Vital Importance of University Research to the New Economy

THE University
Presidents' Council
OF BRITISH COLUMBIA

Modern industrial economies are experiencing revolutionary change. The immediate cause may appear to be technological; however the real forces of change are ideas, knowledge and innovation. Investment, jobs and incomes are directly associated with the strength and vitality of knowledge-based sectors and institutions.

How has university research increased capacity for the new economy?

Over 30% of the growth in per capita income can be attributed to technological innovation. Most of the technological advances in the second half of the 20th century including new biotechnological industries, telecommunications, information technologies, and advanced materials (such as semiconductors, fibre optics, etc.) have their origins in university research.

What are the outcomes of investing in university research?

- Econometric studies estimate that the rate of return on investment in university R & D is 40%.
- Universities are Canada's primary public resource for research and innovation.
- University research in a region is strongly related to innovation, technological development and patents awarded in that region.
- BC university research has led to the creation of over 150 spin-off companies.
- One outcome of the research undertaken at BC universities is patents. BC universities are competitive with the best Canadian universities, and even when compared with world leaders in innovation, (MIT and Harvard) performance is notably good.

US Patents Issued, 1998 and 1999

Universities	1998/99
Western Ontario	9
University of Toronto	13
Queens University	15
University of Alberta	23
UBC/UVIC/SFU	97
Harvard	114
MIT	280

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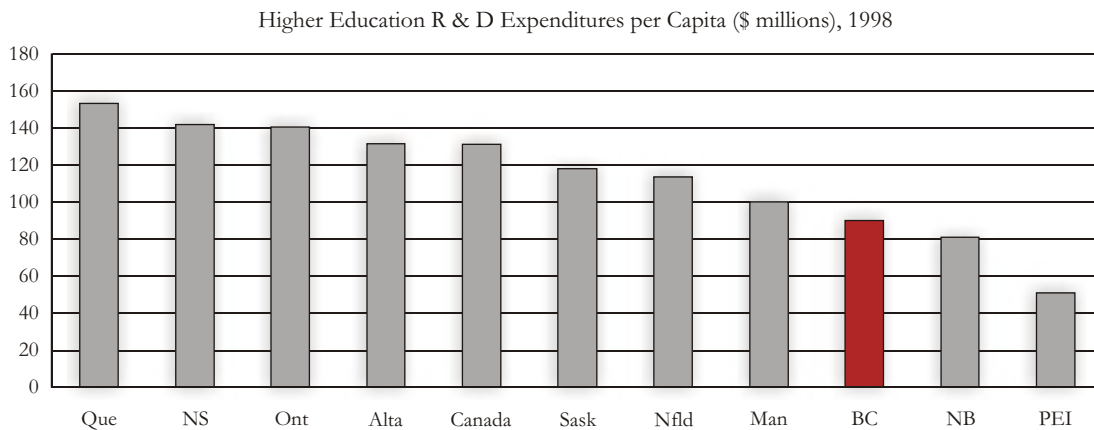
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What are university R & D expenditures across the country?

Canada depends on the university sector for over one quarter of its research and development effort. No other G7 country relies so heavily on its universities for R & D. In BC, universities account for 36% of the provincial R & D effort; however BC ranks below most of the country in higher education R & D expenditures per capita.



What is the impact of the research at BC Universities?

- BC is the third largest biotechnology community in Canada. Approximately 60% of biotechnology companies are the result of spin-offs from BC universities.
- CEO's from the BC technology industry indicate that BC universities are an effective source for recruiting IT professionals but that we don't produce nearly enough to meet the need.
- For every \$1.00 invested by the BC Knowledge Development Fund, BC universities attract a combined additional \$1.50 from the federal government and private sector.
- UBC research alone is responsible for \$826 million in annual revenue in the Greater Vancouver Regional District; other BC universities contribute proportionally.

How do some other provinces invest in university research?

ONTARIO

- Research and Development Challenge Fund was doubled to \$100 million
- Ontario Research Performance Fund provides \$30 million annually to support indirect costs of research
- Ontario Innovation Trust Fund for research infrastructure was expanded from \$500 million to \$750 million
- Premier's Research Excellence Award was doubled to \$10 million.

ALBERTA

- The overall support for sponsored research is growing at the ~~same rate as federal~~ support for research
- The Alberta Heritage Foundation for Medical Research was established in 1980 with a \$300 million investment.
- The Alberta Heritage Foundation for Science and Engineering Research was established in 2000 with a \$500 million investment.

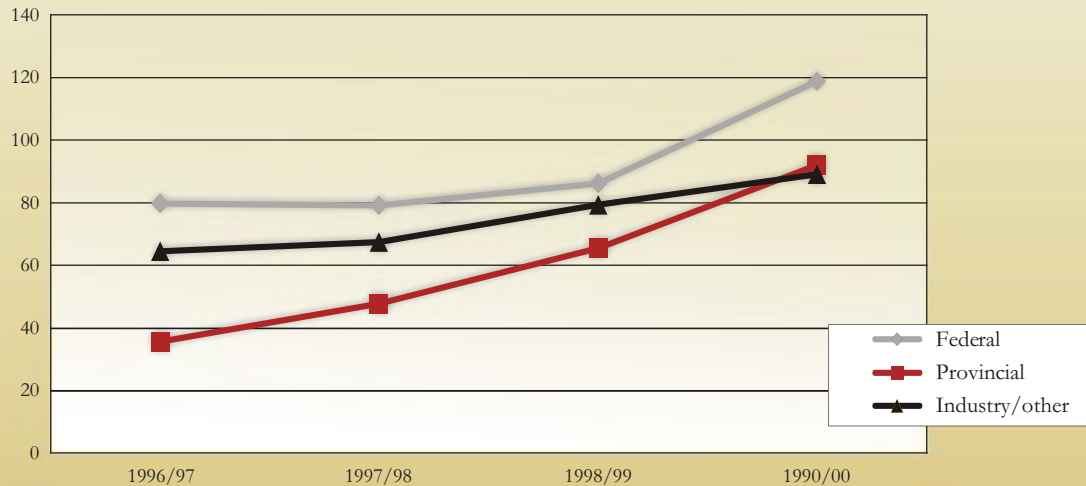


What do BC Universities Need?

1 Core Support Programs

- **Continued investment from the BC Knowledge Development Fund.** To date the province has awarded approximately \$100 million to post-secondary institutions. This has created over \$250 million in investment for new infrastructure.
- **Indirect costs of research** (costs associated with providing the services and physical environment needed to conduct research). Every dollar of direct funding for competitively allocated research awards carries with it to the recipient institution additional costs, which range from 50-100% of the direct funding. The BC Government recognized the economic importance of indirect research costs with \$23M invested in 2001 and this investment must be continued and enhanced.

Total Sponsored Research Revenue to Alberta Universities



- **Increased direct funding for research.** Ontario, Alberta and Quebec have all created funds to enhance research, recognizing the significant impact these investments have upon economic development/diversification.

2 Capacity Support for People

- **Support for students.** In key fields, BC is ranked 5th or lower in the production of PhDs in engineering, applied science and the health professions. In a survey conducted by the BC Technology Industry Association, 76% of the BC technology companies indicated that they have trouble finding R & D staff. Creation of a provincial graduate student scholarship program, modeled after highly successful programs in Ontario and Quebec, is a high priority to retain and attract top rank graduate students, especially at the PhD level. This is a vital complement to faculty recruitment and retention initiatives.
- **Support for faculty.** The ability to attract and retain the best and brightest faculty to BC will be a challenge. The 20 Leadership Chairs are an excellent development. However, our universities need to be able to compete on an international basis. The ability to attract star researchers will help create the economies of the future.

3 Capital Support for Space

- **Space for faculty, students and staff.** BC is in a competitive market for the best research minds and adequate space/facilities/equipment are a key factor in attracting top notch faculty.
- **Space for Equipment.** The new and next generation of research in many fields, especially in the engineering, health and natural sciences, requires additional space to house essential laboratories and equipment. The ability of our universities to house CFI funded projects is an immediate case in point.





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A Report from the BC Universities: Creating Opportunity Together
The University Presidents' Council of BC, June 2001.